IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Stephen Mark KEATING et al.

U.S. Serial No.: Filed Concurrently Herewith

Title of Invention: EMBEDDING DATA IN MATERIAL

745 Fifth Avenue
New York, NY 10151

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Date of Deposit: December 6, 2001

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PRELIMINARY AMENDMENT

U.S. Patent and Trademark Office
Box Patent Application
P.O. Box 2327, Arlington, VA 22202

Sir:

Before the issuance of the first Office Action, please amend the above-identified application as follows:

IN THE CLAIMS:

Please amend claim 21-24, 27, 28, 33 and 52 as follow:

21 (Amended) A method according to claim 1, wherein the data is imperceptibly embedded in the other material.

22. (Amended) A method according to claim 1, wherein the set $\{Cn\}_i$ consists of unmodified coefficients.

23. (Amended) A method according to claim 1, wherein the set $\{Cn\}_i$ consists of modified coefficients preceding Ci where the coefficients are serially ordered.

24. (Amended) A method according to claim 1, wherein the set $\{Cn\}_i$ comprises at least one modified coefficient and at least one unmodified coefficient.

27. (Amended) A method according to claim 25, wherein the said set $\{Cn\}_i$ comprises at least one modified coefficient and at least one restored coefficient, the coefficients preceding C'i.

28. (Amended) A method according to claim 25, further comprising the step of determining the values of the data bits Wj embedded in the material by correlating a reference pseudo random symbol sequence with the modified coefficients Ci' and decoding the correlation values to determine the data Wj modulating the pseudo random sequence and remodulating the reference sequence with the said data to restore Ri.

33. (Amended) Apparatus according to claim 29, further comprising means for determining the values of the data bits Wj embedded in the material, said means comprising a correlator for correlating a reference pseudo random symbol sequence with the modified coefficients Ci', a decoder for decoding the correlations to determine the data Wj modulating the modulated sequence and a modulator for remodulating the reference sequence with the said data to restore Ri.

52. (Amended) A system comprising embedding apparatus according to claim 49, and removing apparatus linked by a channel to said embedding apparatus, the removing apparatus comprising:

a remover for removing the data from the said second material to produce recovered material;

a deriver for deriving the said corrections and identifying data from the said store; and

a corrector arranged to use the stored corrections to correct the recovered material at the said locations identified by the identifying data.

Add the following new claims:

59. (New) Apparatus according to claim 12, wherein the data is imperceptibly embedded in the other material.

60. (New) Apparatus according to claim 12, wherein the set $\{Cn\}_i$ consists of unmodified coefficients.

61. (New) Apparatus according to claim 12, wherein the set $\{Cn\}_i$ consists of modified coefficients preceding Ci where the coefficients are serially ordered.

62. (New) Apparatus according to claim 12, wherein the set $\{Cn\}_i$ comprises at least one modified coefficient and at least one unmodified coefficient.

REMARKS

Claims 1-62 remain in the application. Claims 21-24, 27, 28, 33 and 52 have been amended to eliminate multiple dependencies. New claims 59-62 have been added. Attached hereto is a marked up version of the changes made to claims 21-24, 27, 28, 33 and 52 by the current amendment. The attached pages are captioned **"Version with markings to show changes made."** The filing fee has been calculated based upon the amendments to the claims.

Respectfully submitted,

FROMMER LAWRENCE & HAUG LLP
Attorneys for Applicant

By: _____
William S. Frommer
Reg. No. 25,506
Tel. (212) 588-0800

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the claims:

21 (Amended) A method ~~or apparatus~~ according to claim 1, wherein the data is imperceptibly embedded in the other material.

22. (Amended) A method ~~or apparatus~~ according to claim 1, wherein the set $\{Cn\}_i$ consists of unmodified coefficients.

23. (Amended) A method ~~or apparatus~~ according to claim 1, wherein the set $\{Cn\}_i$ consists of modified coefficients preceding Ci where the coefficients are serially ordered.

24. (Amended) A method ~~or apparatus~~ according to claim 1, wherein the set $\{Cn\}_i$ comprises at least one modified coefficient and at least one unmodified coefficient.

27. (Amended) A method ~~Apparatus~~ according to claim 25, wherein the said set $\{Cn\}_i$ comprises at least one modified coefficient and at least one restored coefficient, the coefficients preceding C'i.

28. (Amended) A method according to claim 25, further comprising ~~wherein~~ the step of determining the values of the data bits Wj embedded in the material by ~~according to the method of claim 11 comprises,~~ correlating a reference pseudo random symbol sequence with the modified coefficients Ci' and decoding the correlation values to determine the data Wj modulating the pseudo random sequence and remodulating the reference sequence with the said data to restore Ri.

33. (Amended) Apparatus according to claim 29, further comprising ~~wherein the~~ means for determining the values of the data bits Wj embedded in the material, ~~according to the method of claim 12, comprises~~ said means comprising a correlator for correlating a reference pseudo random symbol sequence with the modified coefficients Ci', a decoder for decoding the

correlations to determine the data Wj modulating the modulated sequence and a modulator for remodulating the reference sequence with the said data to restore Ri.

52. (Amended) A system comprising embedding apparatus according to claim 49, and removing apparatus ~~according to claim 51~~ linked by a channel to said embedding apparatus, the removing apparatus comprising:

a remover for removing the data from the said second material to produce recovered material;

a deriver for deriving the said corrections and identifying data from the said store; and

a corrector arranged to use the stored corrections to correct the recovered material at the said locations identified by the identifying data.

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